

Atty. Dkt. No. 039363-1106

THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Artis, et al.
Title: PDE5A CRYSTAL
STRUCTURE AND USES
Appl. No.: 10/771,833
Filing Date: 02/03/2004
Examiner: Kim, Alexander D.
Art Unit: 1656
Confirmation 9734
Number:

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INFORMATION DISCLOSURE STATEMENT
UNDER 37 CFR §1.56

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Commissioner for Patents
P.O. Box 1450
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Sir:

Submitted herewith on Form PTO/SB/08 is a listing of documents known to Applicants in order to comply with Applicants' duty of disclosure pursuant to 37 CFR §1.56.

A copy of each non-U.S. patent document and each non-patent document is being submitted to comply with the provisions of 37 CFR §1.97 and §1.98.

The submission of any document herewith, which is not a statutory bar, is not intended as an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicants do not waive any rights to take any action which would be appropriate to

antedate or otherwise remove as a competent reference any document which is determined to be a *prima facie* art reference against the claims of the present application.

TIMING OF THE DISCLOSURE

The listed documents are being submitted in compliance with 37 CFR §1.97(c), before the mailing date of either a final action under 37 CFR §1.113, a notice of allowance under 37 CFR §1.311, or an action that otherwise closes prosecution in the application.

RELEVANCE OF EACH DOCUMENT

All of the documents are in English.

Applicants respectfully request that each listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

FEE

A credit card payment form in the amount of \$180.00 is enclosed in accordance with 37 CFR §1.17(p) to cover the fee associated with an information disclosure statement under 37 CFR §1.97(c) in the amount of \$180.00.

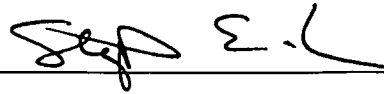
The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 50-0872. Should no proper payment be enclosed herewith, as by the credit card payment form being unsigned, providing incorrect information resulting in a rejected credit

card transaction, or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 50-0872.

Respectfully submitted,

Date November 14, 2006

FOLEY & LARDNER LLP
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By  _____

Richard Warburg, Reg. No. 32,327
By Stephen E. Reiter, Reg. No. 31,192
Attorney for Applicant

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Substitute for form 1449/PTO			Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT			Application Number	10/771,833
(use as many sheets as necessary)			Filing Date	02/03/2004
Sheet 1 of 7			First Named Inventor	Dean R. Artis
PATENT & TRADEMARK OFFICE			Unit	1656
NOV 20 2003			Examiner Name	Kim, Alexander D.
OIP			Attorney Docket Number	039363-1106

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	A1	2001/0008765	07-19-2001	Shinoki et al.	
	A2	2001/0012537	08-09-2001	Anderson et al.	
	A3	2001/0014448	08-16-2001	Chappa et al.	
	A4	2001/0014449	08-16-2001	Nerenberg et al.	
	A5	2001/0016322	08-23-2001	Caren et al.	
	A6	2001/0018642	08-30-2001	Balaban et al.	
	A7	2001/0019827	09-06-2001	Dawson et al.	
	A8	2001/0039271	11-08-2001	Bunnage et al.	
	A9	2002/0009764	01-24-2002	Thompson et al.	
	A10	2002/0058606	05-16-2002	Gonzalez et al.	
	A11	2002/0065286	05-30-2002	Davies et al.	
	A12	2002/0091129	07-11-2002	Booleli	
	A13	2002/0128171	09-12-2002	Watkins et al.	
	A14	2002/0165237	11-07-2002	Fryburg et al.	
	A15	2002/0168424	11-14-2002	Shahinpoor et al.	
	A16	2002/0173502	11-21-2002	Allerton	
	A17	2004/0171062	09-02-2004	Hirth et al.	
	A18	4150949	04-24-1979	Smith	
	A19	5698401	12-16-1997	Fesik et al.	
	A20	5804390	09-08-1998	Fesik et al.	
	A21	5840485	11-24-1998	Lebl et al.	
	A22	6090912	07-18-2000	Lebl et al.	
	A23	6100254	08-08-2000	Budde et al.	
	A24	6130053	10-10-2000	Thompson et al.	
	A25	6197495	03-06-2001	Qiu et al.	
	A26	6288234	09-11-2001	Griffin	
	A27	6297021	10-02-2001	Nienaber et al.	
	A28	6465494	10-15-2002	Earle et al.	
	A29	6479493	11-12-2002	Whitehead et al.	

UNPUBLISHED U.S. PATENT APPLICATION DOCUMENTS

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Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)				Complete if Known		
				Application Number	10/771,833	
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				First Named Inventor	Dean R. Artis	
				Art Unit	1656	
Examiner Name	Kim, Alexander D.					
Attorney Docket Number	039363-1106					
Sheet	2	of	7			

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Document Country Code ³ Number ⁴ Kind Code ⁵ (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Documents	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁶
	A30	WO 99/63931	12-16-1999	The Salk Institute for Biological Studies		

NON PATENT LITERATURE DOCUMENTS						
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	A31	ASHANI and Wilson, A covalent affinity column for the purification of acetylcholinesterase. Biochem. Biophys. Acta, 276:317-322, 1972.				
	A32	BASHFORD et al., (1987) <u>Spectrophotometry and Spectrofluorometry: A Practical Approach</u> , pp. 91-114, IRL Press Ltd				
	A33	BOGER et al., Synthesis of a functionalized rigid bicycle[2,2,1]heptane: a useful hapten for eliciting catalytic antibodies. Journal of Organic Chemistry, 59:5078-5079, 1994.				
	A34	BOLGER, "Molecular Biology of the Cyclic AMP-Specific Cyclic Nucleotide Phosphodiesterases: A Diverse Family of Regulatory Enzymes," <i>Cellular Signaling</i> 6(8):851-859 (1994)				
	A35	BOS et al., The 500 Dalton rule for the skin penetration of chemical compounds and drugs. <i>Experimental Dermatology</i> , 9:165-169, 2000.				

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				Art Unit	1656
				Examiner Name	Kim, Alexander D.
Sheet	3	of	7	Attorney Docket Number	039363-1106

NON PATENT LITERATURE DOCUMENTS				
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.		T ⁶
	A36	BURGERS <i>et al.</i> , "Stereochemistry of hydrolysis of adenosine 3':5'-cyclic phosphorothioate by the cyclic phosphodiesterase from beef heart." <i>The Journal of Biological Chemistry</i> , 254 (20): 9959-9961 (1979)		
	A37	BUTCHER and SUTHERLAND, "Adenosine 3',5'-Phosphate in biological materials." <i>The Journal of Biological Chemistry</i> , 237 (4): 1244-1250 (1962)		
	A38	TAYLOR, <i>et al.</i> , "The Rapid Generation of Oligonucleotide-Directed Mutations at High Frequency Using Phosphorothioate-Modified DNA," <i>Nucleic Acids Research</i> 13:8765-8785 (1985)		
	A39	FEINBERG <i>et al.</i> , Zinc-directed inhibitors for zinc proteinases. <i>Acta Cryst.</i> , D51: 428-449, 1995.		
	A40	FELDER, E.R., "The Challenge of Preparing and Testing Combinatorial Compound Libraries in the Fast Lane, at the Front End of Drug Development," <i>Chimia</i> 48:531-541 (1994)		
	A41	FISHER, <i>et al.</i> , Isolation and Characterization of PDE9A, a Novel Human cGMP-specific Phosphodiesterase, <i>J. Biol. Chem.</i> , 273:15559-15564 (1998).		
	A42	FITZGERALD <i>et al.</i> , Crystallographic analysis of a complex between human immunodeficiency virus type 1 protease and acetyl-pepstatin at 2.0-A resolution. <i>The Journal of Biological Chemistry</i> , 265 (24): 14209-14219, 1990.		
	A43	GELLER <i>et al.</i> , HIV-1 protease and its inhibitors in Theoretical and Computational Methods in Genome Research. Edited by Sahai. New York: Plenum Press, 1997, p. 237-254.		

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	A44	GILLILAND et al., Crystallization of biological macromolecules for X-ray diffraction studies. Current Opinion in Structural Biology, 6:595-603 (1996).		
	A45	GOLDBERG, et al., "O-Labeling of Guanosine Monophosphate Upon Hydrolysis of Cyclic Guanosine 3':5'-Monophosphate by Phosphodiesterase," <i>Journ. Of Biol. Chem.</i> 255:10344-10347 (1980)		
	A46	JIN, et al., "Characterization of the Structure of a Low K _m , Rolipram-sensitive cAMP Phosphodiesterase," <i>Journ. of Biol. Chem.</i> 267:18929-18939 (1992)		
	A47	KEISS et al., Beta-Galactosidase decreases the binding affinity of the insulin-like-growth-factor-ii/mannose-6-phosphate receptor for the insulin-like-growth-factor II. <i>European Journal of Biochemistry</i> , 190:71-77, 1990		
	A48	KLEINBERG and Wanke, New approaches and technologies in drug design and discovery. <i>Am. J. Health-Syst Pharm.</i> , 52: 1323-1336, 1995.		
	A49	MANGANIELLO et al., Cyclic nucleotide phosphodiesterases: Structure, regulation and drug action, Beavo and Houslay, editors, New York: John Wiley & Sons, Inc., 1990, p. 61-85.		
	A50	MARYANOFF et al., Structure activity studies on anticonvulsant sugar sulfamates related to topiramate. Enhanced potency with cyclic sulfate derivatives. <i>Journal of Medicinal Chemistry</i> , 41:1315-1343, 1998.		
	A51	MCPHERSON et al., The Role of X-ray crystallography in structure-based rational drug designs. Chapter 6 in <i>Chemical Structures Approaches Ration. Drug Design</i> . Edited by D.V. Weiner et al. Boca Raton: CRC Press, 1995, p. 161-179.		

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	A52	MICHAELI, <i>et al.</i> , "Isolation and Characterization of a Previously Undetected Human cAMP Phosphodiesterase by Complementation of cAMP Phosphodiesterase-deficient <i>Saccharomyces cerevisiae</i> ," <i>Journ. of Biol. Chem.</i> 268:12925-12932 (1993)		
	A53	PHAN et al., Extensively methylated myosin subfragment-1; Examination of local structure, interactions with nucleotides and actin, and ligand-induced conformational changes. <i>Biochemistry</i> , 33:11286-11295, 1994.		
	A54	RALL and SUTHERLAND, "Formation of a Cyclic Adenine Ribonucleotide by Tissue Particles," <i>Dept. of Pharmacology, School of Medicine</i> 1065-1076 (1957)		
	A55	ROSENBERRY et al., Purification of acetylcholinesterase by affinity chromatography and determination of active site stoichiometry. <i>The Journal of Biological Chemistry</i> , 247 (5): 1555-15565, 1972.		
	A56	SICA et al., Affinity chromatography and the purification of estrogen receptors. <i>The Journal of Biological Chemistry</i> , 248 (18): 6543-6558, 1973.		
	A57	SODERLING, <i>et al.</i> , "Cloning and Characterization of a cAMP-Specific Cyclic Nucleotide Phosphodiesterase," <i>Proc. Natl. Acad. Sci. USA</i> 95:8991-8996 (1998)		
	A58	SODERLING, <i>et al.</i> , "Identification and Characterization of a Novel Family of Cyclic Nucleotide Phosphodiesterases," <i>Journ. Biol. Chem.</i> 273(25):15553-15558 (1998)		

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	A59	SONNENBURG, <i>et al.</i> , "Identification of Inhibitory and Calmodulin-binding Domains of the PDE1A1 and PDE1A2 Calmodulin-stimulated Cyclic Nucleotide Phosphodiesterases," <i>Journ. of Biol. Chem.</i> 270:30989-31000 (1995)	
	A60	THOMPSON, <i>et al.</i> , "Regulatory Mechanisms of Particulate Cyclic Nucleotide Phosphodiesterases," <i>Adv. In Sec. Mess. and Phosph. Res.</i> 25:165-184 (1992)	
	A61	UNDERWOOD, <i>et al.</i> , "Comparison of Phosphodiesterase III, IV and Dual III/IV Inhibitors on Bronchospasm and Pulmonary Eosinophil Influx in Guinea Pigs," <i>Journ. of Pharm. and Exp. Ther.</i> 270(1):250-259 (1994)	
	A62	WIENCEK, New strategies for protein crystallization growth. <i>Ann.Rev.Biomed.Eng.</i> , 1:505-534, (1999).	
	A63	WUTHRICH, K., "Three Dimensional Protein Structures by NMR," <i>Library of Congress</i> 176-199 (1986)	
	A64	WUTHRICH, NMR-This other method for protein and nucleic acid structure determination. <i>Acta Cryst.</i> , D51: 249-270, 1995.	
	A65	YAMAZAKI, <i>et al.</i> , "Cyclic GMP-specific, High Affinity, Noncatalytic Binding Sites on Light-activated Phosphodiesterase," <i>Journ. of Biol. Chem.</i> 255(23):11619-11624 (1980)	
	A66	YANG ET AL., Peptide analogs from E-cadherin with different calcium-binding affinities. <i>Journal of Peptide Research</i> , 55:203-215, 2000.	

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Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(use as many sheets as necessary)</i>				Complete if Known	
				Application Number	10/771,833
				Filing Date	02/03/2004
				First Named Inventor	Dean R. Artis
				Art Unit	1656
Examiner Name	Kim, Alexander D.				
Attorney Docket Number	039363-1106				
Sheet	7	of	7		

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ⁶
	A67	HAFNER et al., Biotechniques 2001 Apr;30(4):852-6, 858, 860 passim.	

Examiner Signature		Date Considered	
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